

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Permittee Name: Eagle Valley Golf Course
3999 Centennial Park Drive
Carson City, Nevada 89706

Permit Number: NEV92021

Description of Discharge: Treated Effluent Reuse for Irrigation

Location: Eagle Valley Golf Course
3999 Centennial Park Drive
Carson City, Nevada 89706

Sec. 2 & 3	Township 15 North	Range 20 East	Mt Diablo Base & Meridian	
FEATURE	LAT (d m s)	LON (d m s)	LAT (decimal °)	LON (decimal °)
General location between East and West Courses	39° 11' 36.0" N	119° 42' 36.0" W	39.1933333°	-119.7100000°

General: Carson City Wastewater Reclamation Plant (CCWRP) wastewater is treated to tertiary standards and effluent is delivered to a municipal facility reuse site, Eagle Valley East and Eagle Valley West Golf Courses. Application will be by drip and spray irrigation to turf and other landscape features. Runoff from the reuse sites is prohibited. The permit is held by Eagle Valley Golf Course, as the Permittee and is the responsible party for the onsite reuse of treated effluent for irrigation.

The first permit authorizing the use of reclaimed wastewater for irrigation at this site was issued in 1993. Irrigation using treated effluent is conducted in accordance with an Effluent Management Plan (EMP) submitted to, and approved by, the Nevada Division of Environmental Protection Bureau of Water Pollution Control (BWPC). An approved EMP is on file at the BWPC.

Flow: 3.0 MGD Daily Maximum and 30-Day Average. Annual application volume authorized by supplier is 1,075 acre feet per year (AF/YR) on approximately 213 acres of turf and other landscape features.

Characteristics: The permit is for the discharge of tertiary treated, partially denitrified, filtered, and disinfected effluent for use in the irrigation of turf and other landscape via drip and spray irrigation at the Eagle Valley East and Eagle Valley West Golf Courses in Carson City, Nevada. The annual hydraulic loading limit was not exceeded in the last permit period, 2005 to 2010. The maximum 30-day average flow was 2.2 MGD in the last permit period.

Reuse Water Quality supplied by the Carson City Wastewater Reclamation Plant [NEV90008]:

BOD ₅ :	30 mg/l 30-Day average; 45 mg/l Daily Maximum
TSS:	30 mg/l 30-day average; 45 mg/l Daily Maximum
Fecal Coliform (cfu, mpn ¹)	2.2/100 ml 30 day average; 23/100 ml daily max.
Total Nitrogen - N:	20 to 40 mg/L (average 26 mg/L)
pH	Between 6.0 and 9.0 SU
¹ cfu = colony forming unit	mpn = most probable number

Receiving Water Characteristics: Treated effluent used for irrigation discharges to groundwater, which is encountered at depths ranging from approximately 2 to 28 feet below grade surface. Groundwater gradient has been reported between 0.011 to 0.016 feet per foot with a flow direction toward the south and slightly southeast. Groundwater monitoring wells MW-6 and MW-18 are used to characterize groundwater upgradient and downgradient, respectively, on the West Course. Both monitoring wells are located in irrigated areas of the course.

Monitoring wells MW-7, MW-8, and MW-12, in order from north to south, respectively, are used to characterize

groundwater below the East Course. Monitoring well #8 is located centrally within the East Course, and MW-12 is located approximately 400 feet north of the southern property boundary, presumably down-gradient of MW-8. All three (3) wells appear to be located within irrigated areas. Nitrate and depth to water data extracted from quarterly discharge monitoring reports and documents on file is as follows:

Well Location	Casing Depth (feet below grade surface)	Screen Interval (feet below grade surface)	Approximate Depth to Water ¹ (feet below top of casing)	Nitrate Concentration (mg/L) maximum (1/2005 to 6/2010)
MW-6	24.7	15-25	Dry	NA Consistently dry
MW-7	44.7	35-50	26.77	6
MW-8	34.25	32.5-35	11.68	16
MW-12	33.7	30-35	3.94	2.8
MW-18	51	NA	4.37	0.2

1 Average depth to water (feet), data reported 1998 through 2003

Total Nitrogen levels in MW8 (an up-gradient well) have been consistently above 10 mg/L since 1998. Nitrogen levels in this well do not show an increasing trend; levels have averaged 15.2 mg/L for the past 11 years. The elevated nitrogen levels appear to be localized and are likely due to activity prior to the golf course construction. No other monitoring well total nitrogen analyses exceeded the set permit limits. The site's down gradient wells, MW-12 and MW-18, demonstrate total nitrogen levels well within the required 10 mg/L limit set for groundwater protection.

Drinking Water Protection: A portion of the East Course of this Bureau of Water Pollution Control (BWPC) permit facility lies within the 25-year Wellhead Protection Area (WHPA) established for this vicinity. The permitted facility property lies within the 3,000 foot radius Drinking Water Protection Area (DWPA) of a Carson City Public Works Public Water System (PWS) well. Reuse water used by the facility in accordance with permit limitations is not expected to adversely impact PWS wells in the area.

Corrective Action Sites: This BWPC permit facility is not within a one mile radius of any active Bureau of Corrective Actions (BCA) facility site.

Proposed Effluent Limitations: During the period beginning on the effective date of this permit, and lasting until the permit expires, the Permittee is authorized to manage and discharge reuse water supplied by the CCWRP on the Eagle Valley Golf Course. The Eagle Valley Golf Course is authorized to irrigate turf and other landscape features with effluent treated in accordance with permit NEV90008 issued to CCWRP. The Permittee is authorized consumptive use of treated effluent water for spray and drip irrigation and soil conditioning at the site.

- The Permittee shall monitor the discharge (Outfall 001) of treated effluent delivered to the Eagle Valley Golf Course for use authorized by this permit [NEV92021] at a flow meter accessible at the facility and available for discharge measurement.
- Analytical results taken for compliance with the monitoring requirements specified below shall be obtained from CCWRP [NEV90008] and reported by the Permittee for permit compliance before blending with any water supplied by any other source. The quality of the irrigation water used by the Permittee may be reported as calculated values when the treated effluent is blended with another water supply.

Discharge shall be monitored and reported by Permittee in accordance with limitations specified in Table I.1.

TABLE I.1

PARAMETER		LIMITATIONS		MONITORING REQUIREMENTS ¹	
		30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (Outfall 001)	MGD	3.0	3.0	Daily	Flow meter
Total Nitrogen ² as N	mg/l	M&R	M&R	Weekly	Composite

PARAMETER	LIMITATIONS		MONITORING REQUIREMENTS ¹	
	30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Fecal Coliform ² cfu, mpn per 100 ml	2.2	23	Weekly	Discrete
MGD: Million Gallons per Day M&R: Monitor & Report	cfu: Colony Forming Unit mpn: Most Probable Number		ml: milliliter mg/l: milligram per liter	

1. See Part I.C. of permit for additional information on sampling, testing, reporting, monitoring and definitions related to requirements.

2. During application periods, sample results are to be obtained weekly from NEV90008 and reported in Permittee's quarterly DMR.

Rationale for Permit Requirements

Flow: Flow is limited by the volume of treated effluent requested and available from the Carson City Utility Department Wastewater Reclamation Plant.

Total Nitrogen: The concentration of total nitrogen in treated wastewater used for irrigation is required for purposes of determining mass discharge to irrigated landscape areas. The nitrogen concentration in treated wastewater is a component of the calculation for monthly nitrogen mass application, which is ultimately used to reconcile annual nitrogen budgets. The total nitrogen as nitrogen (as N) application rate and the annual nitrogen load (balance) are required under the EMP

Fecal Coliform: The concentration of fecal coliform in treated wastewater discharged for irrigation is restricted in accordance with NAC 445A.276 Reuse Category B.

Groundwater Monitoring Requirements

The permit, issued in 1998, was written to accommodate the elevated nitrate as N concentrations identified at monitoring well #8 and in the immediate vicinity by requiring a specific annual review of groundwater monitoring data collected at this well location. If an increasing trend is evident, then abatement measures are to be implemented to correct and remedy further degradation of groundwater.

As of June 2010, groundwater concentrations of nitrate as N at MW-8 have remained stable in the range of 14 to 16 mg/L throughout the evaluation time period. Therefore, the specific condition set in 1998 for assessing the conditions observed at monitoring well location MW-8, is maintained in the proposed permit. The remaining monitoring wells used to profile groundwater at the facility are subject to threshold conditions progressively invoked as total nitrogen as N concentrations increase to 7, 9, and 10 mg/L.

Wells shall be monitored in accordance with permit conditions and EMP requirements. Should site conditions and/or operational activities necessitate or warrant the installation of additional monitoring wells, all wells shall be incorporated into the required monitoring schedule. All subsequent monitoring wells proposed or required (designs and locations) shall be approved by the Division prior to installation and constructed in general accordance with "WTS-4: Monitoring Well Design Requirements" (NDEP, February 1997).

If an increasing total nitrogen as nitrogen trend is evident or suspect, the EMP shall be revised to provide management practices that increase nitrogen uptake by vegetation and/or adjust other nitrogen sources such as fertilizer application rates. The Permittee shall also take all corrective action necessary to ensure that there is no further degradation of groundwater.

Monitoring wells: MW-6, MW-7, MW-8, MW-12, and MW-18, shall be sampled for the presence of nitrogen compounds, TDS, and chloride. Monitoring wells shall be measured and sampled according to the following parameters:

Groundwater Monitoring

PARAMETERS	GROUNDWATER LIMITATIONS	SAMPLE LOCATIONS ¹	MONITORING REQUIREMENTS	
			Measurement Frequency ²	Sample Type
Depth to Water (feet)	Monitor & Report	Monitoring Well	Quarterly	Discrete Measurement
Groundwater Elevation (amsl)	Monitor & Report	6, 7, 8, 12, 18	Quarterly	Discrete Measurement
Total Nitrogen as N (mg/L)	Monitor & Report	6, 7, 8, 12, 18	Quarterly	Discrete
Nitrate as N (mg/L)	Monitor & Report	6, 7, 8, 12, 18	Quarterly	Discrete
Total Dissolved Solids (mg/L)	Monitor & Report	6, 7, 8, 12, 18	Quarterly	Discrete
Chloride (mg/L)	Monitor & Report	6, 7, 8, 12, 18	Quarterly	Discrete

ft: feet

amsl: above mean sea level

mg/L: milligram per liter

as N: as Nitrogen

Footnotes:

- ¹: Monitoring wells currently include: MW-6, MW-7, MW-8, MW-12, and MW-18. All groundwater monitoring wells installed as a function of the permitted discharge shall be included in the monitoring program prescribed.
- ²: Sampling frequency may be modified or reduced, in whole or in part, at the discretion of the Division, upon demonstration of groundwater concentrations or conditions which warrant or justify alternative monitoring schedules.
- ³: Groundwater gradient and flow direction shall be calculated based on surveyed well locations and casing elevations. Well locations must be clearly labeled on a scaled map illustrating and denoting the groundwater gradient and flow direction.

For monitoring wells: MW-6, MW-7, MW-8, MW-12, and MW-18, at the time of permit issuance:

If the total nitrogen as nitrogen concentration in groundwater at a monitoring well location is below 7.0 mg/L, and subsequent concentrations measured increase to:

- A. 7.0 mg/L, the Permittee shall revise the EMP to provide management practices which increase the nitrogen uptake by vegetation and/or adjust other nitrogen sources such as fertilizer application rates.
- B. 9.0 mg/L, the Permittee shall execute corrective actions necessary to ensure no further degradation of groundwater. The Permittee shall conduct an engineering evaluation that reviews irrigation programs, lawn maintenance practices, hydrologic conditions, or any other pertinent factor or parameter to define and describe the cause or source of additional nitrate load to the shallow aquifer and shall propose short and long-term solutions to justify continued use of treated effluent for irrigation purposes.
- C. 10.0 mg/L, the Permittee shall discontinue the use of reclaimed wastewater and the discharge to groundwater shall cease, unless otherwise authorized by the Division.

If the total nitrogen as nitrogen concentration in groundwater at a monitoring well location is above 7.0 mg/L, each year the total nitrogen as nitrogen concentrations in groundwater shall be plotted against date for the most current five (5)-year period. The plot must include all four (4) quarters of the current year and be submitted with the 4th quarter Annual Report.

Schedule of Compliance and Special Conditions

The Permittee shall implement and comply with the provisions of the following schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which

the Administrator may make in approving the Schedule of Compliance.

- a. The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- b. The Permittee shall maintain and revise, as necessary, the Effluent Management Plan (EMP) sections for each site keeping all information required by I.B of the permit current in accordance with WTS-1-B design criteria. Materials submitted for Division approval shall be stamped by a registered Nevada PE.

Within ninety (90) days of permit effective date, **MM DD, 2011**, the Permittee shall:

- i. Submit an updated EMP for the permittee's managed reclaimed water use site(s) for review and approval by the Division. The submitted EMP shall include any change made to the treatment system since the last Division approved edition needed to comply with this permit as issued.
OR
 - ii. Submit a letter to the Division indicating that the current approved EMP has not changed since the last Division approval and that the manual and approved operations are still valid for the permittee's managed reclaimed water use site(s).
- c. In adherence with the approved EMP, the Permittee shall provide the following certification with each quarterly report: *"I certify that during each month of the previous quarterly reporting period, all operational procedures outlined in the approved Effluent Management Plan for this facility were adhered to."*

Proposed Determination

The Division has made the tentative determination to issue the proposed permit for a period of five (5) years.

Procedures for Public Comment:

The Notice of the Division's intent to issue the permit authorizing the facility to discharge to the groundwater of the State of Nevada subject to the conditions contained within the permit is being sent to the **Reno Gazette Journal** and the **Nevada Appeal** for publication. The notice is being mailed to interested persons on the NDEP-BWPC mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the publication of the public notice. All comments must be received by 5:00 pm local time on August 9, 2011. The comment period can be extended at the discretion of the Administrator.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determined to be appropriate. All public hearings must be conducted to accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Prepared by: E. Samuel Stegeman, P.E.
March 2011

NEV92021_Eagle Valley.FAC11[pub-draft].doc